The Evolution of Gender in the Labor Market

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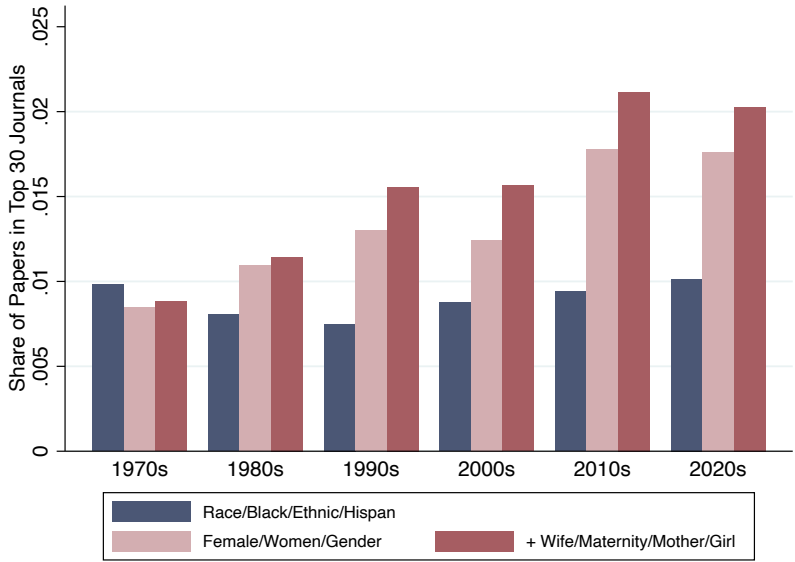
Background

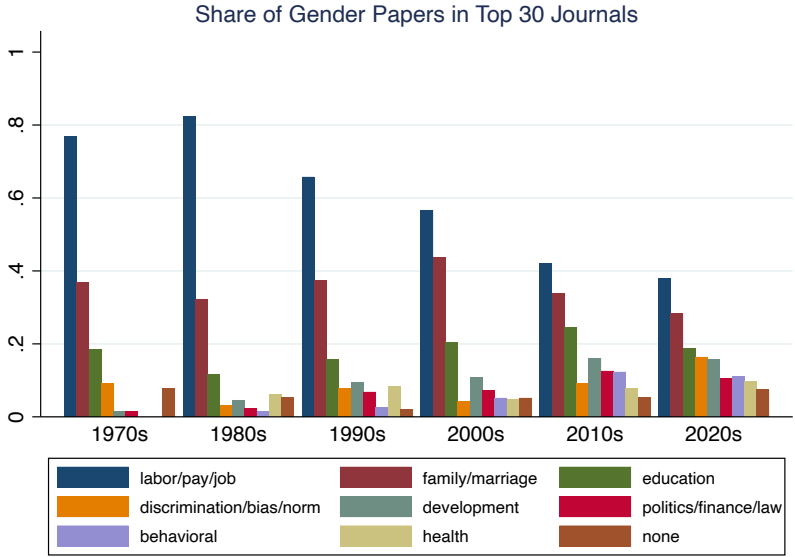
- Remarkable progress of women in the labor market marks one of the most significant economic and social changes of the past half a century
- Large increase in interest in gender topics since the 1990s
  - Claudia Goldin 2024 Nobel Prize
- Study of gender has contributed significantly to modern labor economics

> “It would not be much of an exaggeration to claim that women gave “birth" to modern labor economics, especially labor supply.
>
> Economists need variance to analyze changes in behavioral responses, and women provided an abundance of that.
>
> Men, by and large, were not as interesting, since their participation and hours varied far less in cross section and over time."
>
> – Claudia Goldin, Ely Lecture, 2006

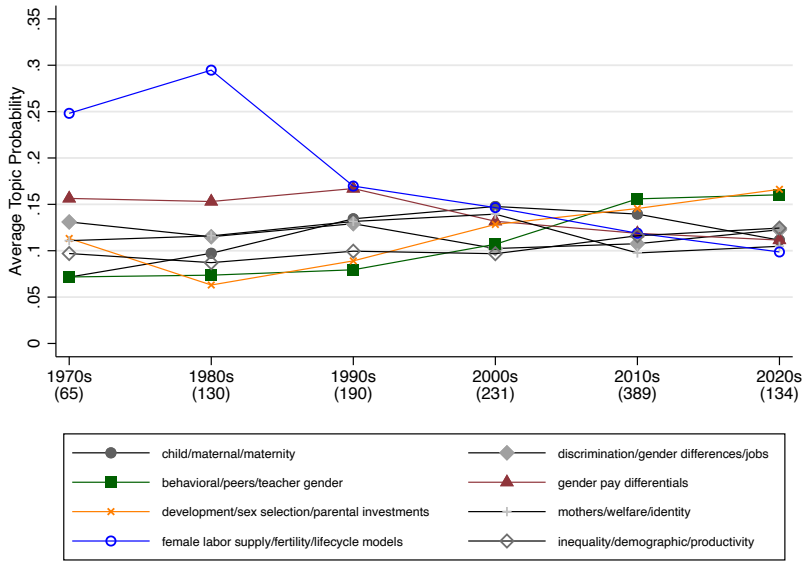
Gender vs. Race papers in top 30 economics journals



Evolution of topics in gender papers I



Evolution of topics in gender papers II

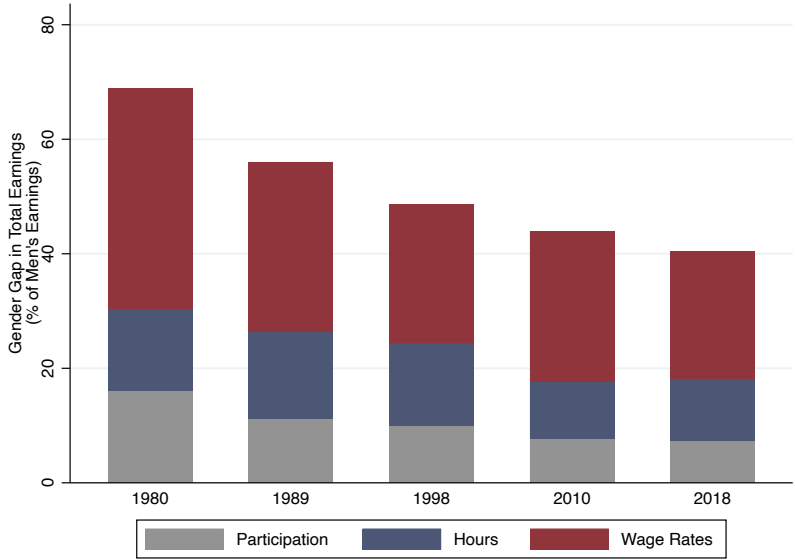


This talk

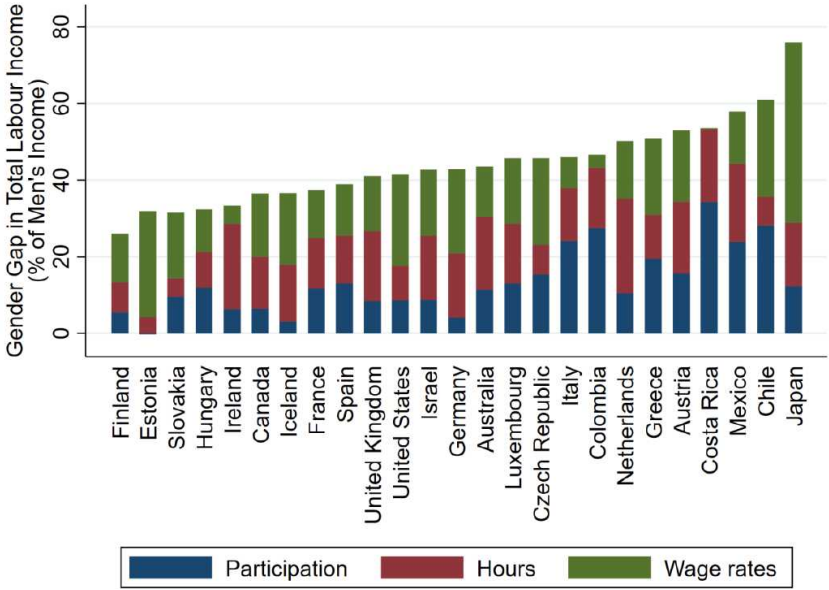
1. Overview of trends
   - Gender inequalities over time
2. Illustrative framework: Simple model of labor supply of the secondary earner
   - Organize key explanations for gender gaps in the literature
3. Evolving perspectives on gender inequality
   - Roles of preferences and constraints
   - The career cost of children
   - The role of gender norms

Overview

Gender gaps in earnings (US): Participation, hours and wages

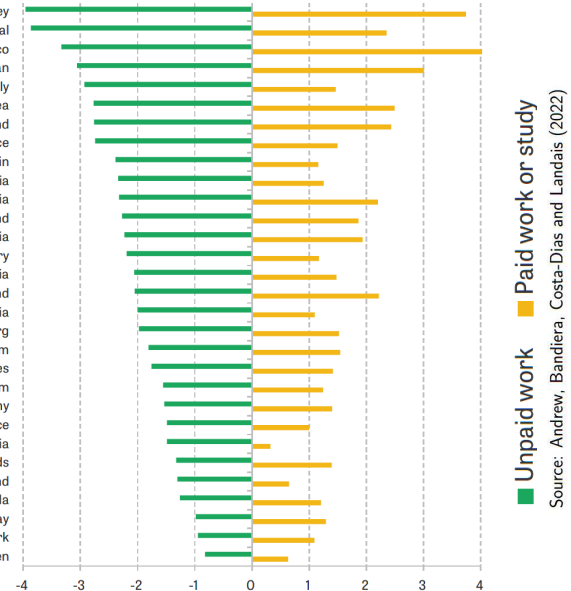


Gender gaps in earnings in high-income countries

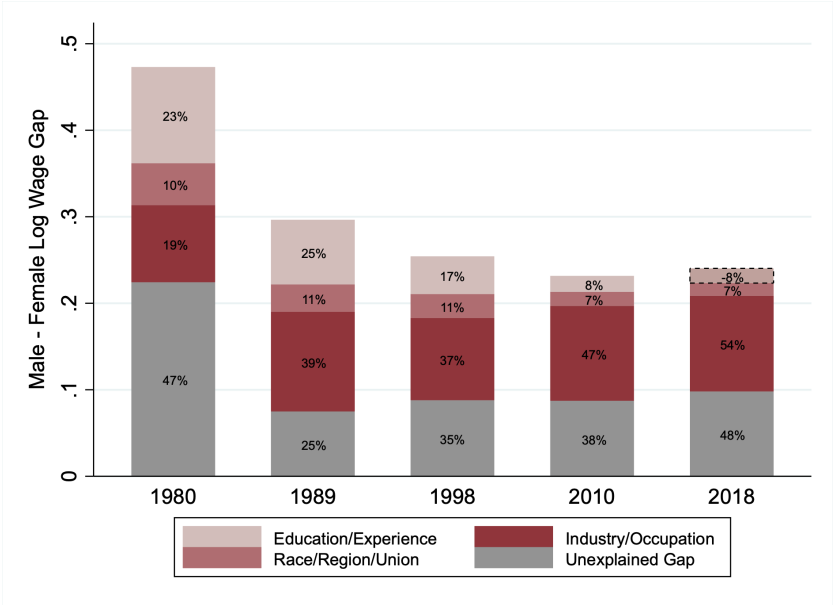


Source: Andrew, Bandiera, Costa-Dias and Landais (2022)

Gender gaps in paid and unpaid work ($h_{men} - h_{women}$)



Decomposition of gender wage gaps in the US



Taking stock of the evidence

- Important hurdles on the path towards gender equality in all countries
  - Women make educational choices less conducive to high-earning careers
  - Large and persistent gender gaps in employment and wages
  - Women bear the whole earning penalty from parenthood
  - Gender gaps in paid work more than offset by women's disproportionate involvement in domestic work
- Despite: equalized educational opportunities and equal pay legislation

1. Why have the gender gaps not closed?

2. (why) Is this a problem?

Overview

Framework

- Modeling labor suppy of the secondary earner to describe the gender gap in earnings and its components:
  - productivity
  - preferences
  - wage markdown
  - norms

The representative household

- Unitary household derives utility from consuming commodity that combines market goods m and home time H: $U = m^{1-\theta} H^{\theta}$
  - θ: preference for time-intensive commodity
- Husband works given $\bar{h}_m$ at wage $w_m = p_m$ in the market; $1 - \bar{h}_m$ at home
- Couple chooses wife's time allocation between market (h_f) and home ($1 - h_f$).
- Wife's wage: $w_f = \phi p_f$.
  - $\phi < 1$ reflects noncompetitive markdown (monopsony, discrimination, etc)
- Household time aggregator: $H = (1 - h_f)^{\eta}(1 - \bar{h}_m)^{1-\eta}$
  - η: importance of wife's time in production of commodity

Optimization

$$\max_{h_f \geq 0} (1-\theta)\ln(w_f h_f + w_m \bar{h}_m) + \theta\left[\eta \ln(1-h_f) + (1-\eta)\ln(1-\bar{h}_m)\right]$$

- Reservation wage = value of wife's time when fully specialized in home production:

$$w_R = \frac{\theta}{1-\theta}\eta w_m \bar{h}_m$$

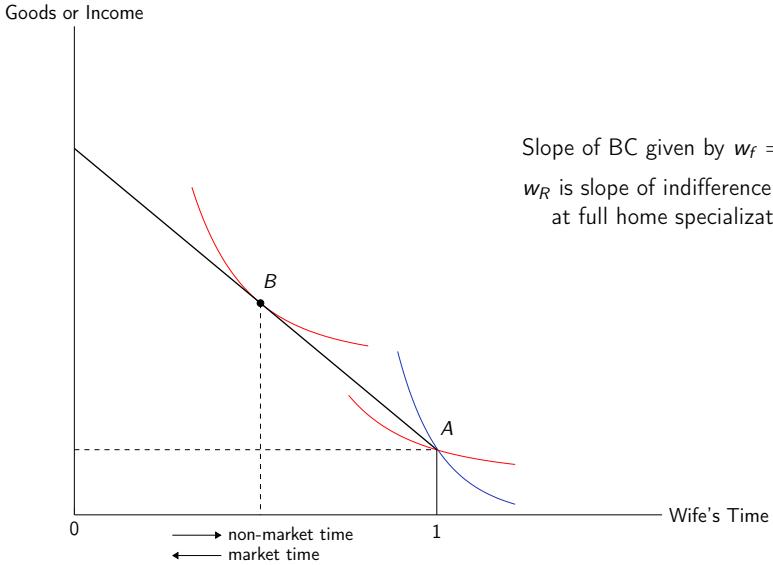
↑ with (female) time intensive consumption (θ, η) and income effects ($w_m \bar{h}_m$)

- If $w_f = \phi p_f < w_R$: wife does not participate to labor market
  – extensive margin of labor supply
- If $w_f = \phi p_f \geq w_R$: wife works

$$h_f^* = \frac{1 - \tilde{\theta}\eta\phi\frac{p_m}{p_f}\bar{h}_m}{1+\tilde{\theta}\eta}$$

in the market and $1 - h_f^*$ in the home (where $\tilde{\theta} = \frac{\theta}{1-\theta}$)
– intensive margin of labor supply

Female labor supply



Slope of BC given by $w_f = \phi p_f$

w_R is slope of indifference curve at full home specialization

Gender earnings ratio

- Wage and labor supply contribution to the earnings ratio:

$$\frac{w_f h_f^*}{w_m \bar{h}_m} = \begin{cases} \frac{\phi \frac{p_f}{p_m} \bar{h}_m^{-1} - \tilde{\theta}\eta}{1+\tilde{\theta}\eta}, & \text{for } \phi p_f \geq \tilde{\theta}\eta p_m \bar{h}_m \\ 0, & \text{for } \phi p_f < \tilde{\theta}\eta p_m \bar{h}_m \end{cases} \tag{1}$$

- Gender gap in earnings
  - falls with relative productivity p_f/p_m
  - rises with
    - female wage markdown ϕ,
    - preferences for time-intensive consumption θ,
    - gendered norms η,
    - income effects $p_m \bar{h}_m$.

Applications

- **Children**
  - Increase in time intensity of household commodity: $\uparrow \theta$; $\downarrow h_f$ or exit labor market
  - Impact amplified by gendered norms η and time intensity of husband's job $\bar{h}_m$
  - Work interruptions could lower latent productivity p_f
  - Constraints on acceptable job opportunities increase monopsony power (lower ϕ)
- **Occupational choice**
  - Minimum time requirements on a job ($h_f = \{0, \bar{h}_f\}$) reduce participation
- **Labor demand**
  - Time-saving technologies lower θ
  - Female-friendly tech progress and female human capital gains raise p_f/p_m
- **Endogenous norms**
  - $\eta = F(LFP(\eta^*))$
  - Multiple equilibria

Overview

Current perspectives

Two fundamentally different explanations for gender gaps:

1. Essential differences between men and women
   - *Inherent* differences in preferences, skills, or psychological traits drive educational choices and labor market outcomes
   - Gender inequality $\rightarrow$ manifestation of these differences

2. Men and women similar in relevant dimensions, but face different opportunities and constraints
   - Family responsibilities, social norms/stereotypes, discrimination
   - Gender inequality $\rightarrow$ symptom of misallocation

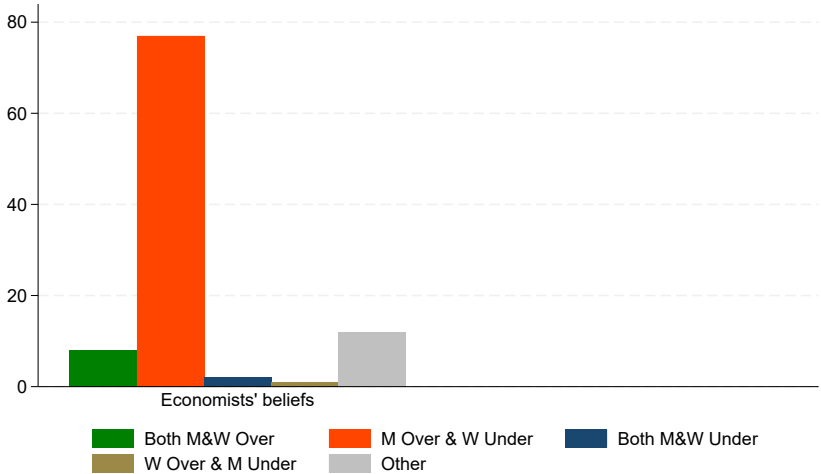
Challenges:

- *Observed* gender differences in skills/traits or preferences could be *endogenous* to norms/stereotypes/discrimination

How different are men and women?

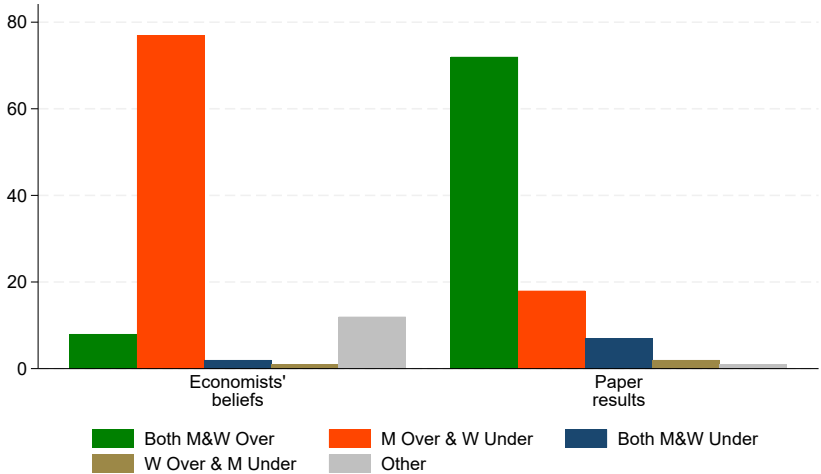
- A number of traits related to labor market success, especially in high-paying jobs
  - Risk-taking, competitive behavior, self-confidence, social preferences and others
  - Gender differences in these traits have been documented in a variety of lab experiments
  - But meta analyses have shown that differences tend to explain a modest proportion of gender gaps (Blau and Kahn, 2017).

Beliefs about gender gaps in self-confidence



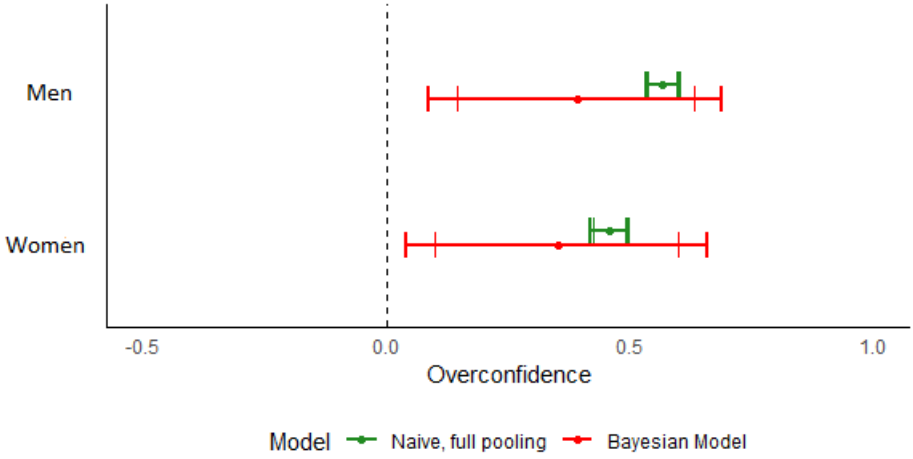
Source: Bandiera, Parekh, Petrongolo and Rao (2023)

Beliefs vs evidence



Source: Bandiera, Parekh, Petrongolo and Rao (2023)

Gender gaps in self-confidence?



Source: Bandiera, Parekh, Petrongolo and Rao (2022)

The gender similarity hypothesis

- Mean gender differences in many traits are small relative to their variation within each gender
- 124 traits considered by Hyde (2005): for 78% there is large enough overlap between male and female distributions to conclude that men and women are more alike than different in many relevant traits.
  - e.g. self-esteem, math, verbal skills, gregariousness and conscientiousness, leadership, and academic self-concept
- Clear exceptions in a few domains
  - motor skills; some measures of sexuality; physical aggression.
  - Personal and professional consequences of sexual harassment and violence against women (Folke and Rickne 2022; Adams et al 2024)

Constraints, barriers and their consequences

- Major advances in economists' understanding of gender gaps
- Differential gender opportunities and barriers lead to questions of allocative efficiency
- New perspective on inequalities beyond zero-sum fallacy: gender equality as pathway to unlock untapped talent
  - 20%-40% of US growth over past half a century can be explained by improved allocation of talent, thanks to improved access to education and declining occupational segregation for women and black men (Hsieh et al, 2019).
  - Performance of female employees within a multinational firm is higher in countries where women are underrepresented in the candidate pool (Ashraf et al 2024)
  - Not just about gender: "lost inventors" and "lost inventions" due to socio-economic barriers (Van Reenen et al, 2019)

Constraints, barriers and their consequences

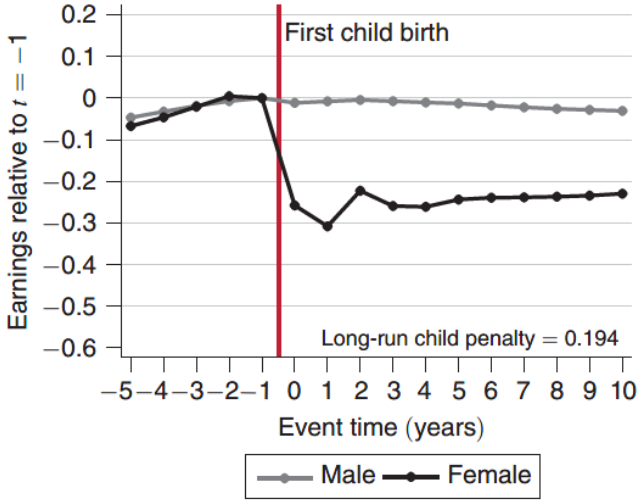
- Barriers to entry also matter for allocation of men's talent
- UK social care sector (80% female): an experiment that attracted more male applicants improved selection of male talent (Delfino, 2024).
- Finnish education sector: lifting a 40% male hiring quota in the 1980s led to higher female concentration and lower attainment among pupils.
  - The diversity quota achieved a more efficient allocation of talent than the unconstrained selection process that replaced it, as this penalized valuable traits and skills among the under-represented group (Schaede and Mankki, 2024).
- How about one of the most male-dominated occupations – care of own children?

Overview

The nature and sources of labor market barriers

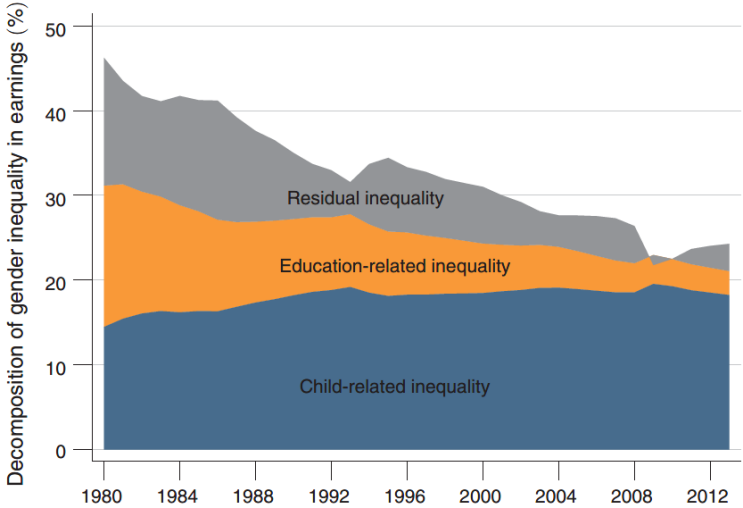
- Gender differences in constraints has emphasized women's primary role as child-bearers and carers
- Once human capital gaps have closed and reversed, and outright discrimination has waned, "*it's all about children*"
- Three main approaches:
  - Preferences for fertility subsumed in education, occupation, and labor supply choices in dynamic life-cycle model (Adda et al, 2017)
  - Instrument for no. of children (twin births, sex composition, IVF – e.g. Lundborg et al 2017)
  - Event-study evidence before/after birth (e.g., Kleven et al, 2019)
- While approaches differ on assumptions and strengths & weaknesses, consensus is that parenthood drives large and persistent drops in female earnings, relative to male earnings, aka *child penalties*

Child penalties in earnings, Denmark 1980-2014



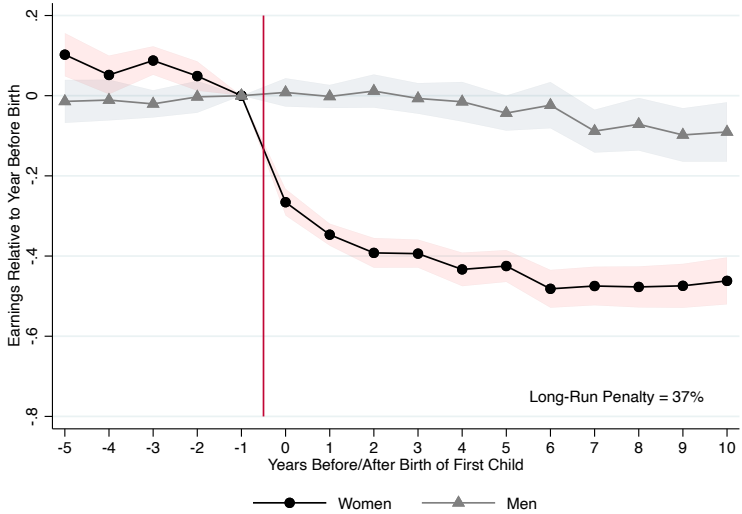
Source: Kleven, Landais and Sogaard (2019)

Decomposition of gender gaps in Denmark



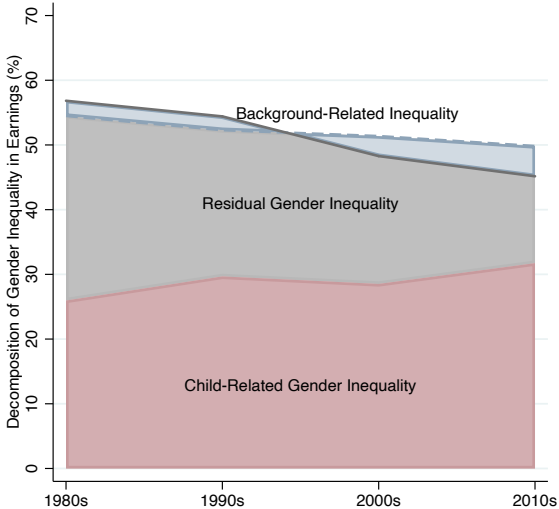
Source: Kleven, Landais and Sogaard (2019)

Child penalties in earnings, US 1976-2017



Source: Cortes and Pan, forthcoming

Decomposition of gender gaps in the US



Source: Cortes and Pan, forthcoming

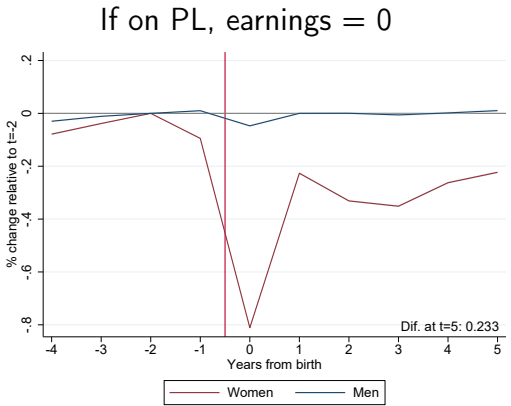
Approaches to quantify the child penalty

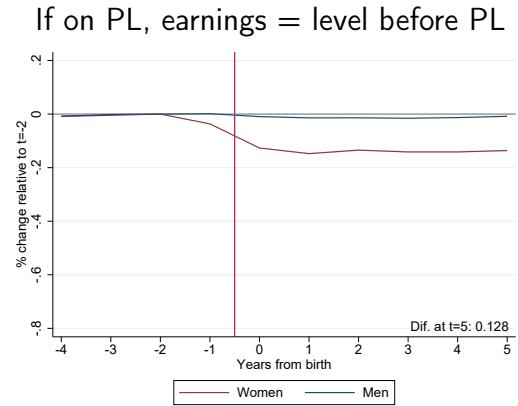
- Structural estimates of life-cycle models with educ/occ choices, family formation, and labor supply decisions (Adda et al 2017)
- IV approaches
  - Twin births and sex mix: negative but short-lived impacts of arrival of 2nd/3rd child (Rosenzweig and Wolpin 1980, Angrist and Evans 1998)
  - (In)fertility shocks following IVF (Lundborg et al 2017, Bögl et al 2024)
    - large fertility impacts in short run, smaller effects in longer-run
    - external validity of LATE; adequate control group?
- Event-study approaches (Kleven et al 2019, among many others)
  - Identify dynamic treatment effects of fertility by comparing individuals of same sex and age who give birth at different ages
  - Assumption that timing of fertility is independent of counterfactual outcomes
  - Sudden, large and persistent setbacks in mothers' careers, though not on fathers

Approaches to quantify the child penalty

- Besnes et al. (2023) combine event-study & IVF treatment approach
  - 23% widening of earnings gap at birth, down to 13% in the long-run
  - in-between 18% estimate from conventional event-study and 4.8% IVF-based IV estimate
  - Long-run effects driven by fertility premium for partners
- Recent work suggests not just a motherhood penalty during the childbearing years, but a fatherhood premium
  - Goldin et al. (2022); Juhn and McCue (2017); Killewald (2013)
  - Fatherhood premia in the U.S. larger among college graduates, and for men in time-intensive occupations $\rightarrow$ specialization of men and women once they become parents
- In high-income countries, sizable share of child penalties are represented by "incapacitation" effects of parental leave spells (Adams et al, 2024)

"Incapacitation effects" of parental leave





Source: Adams, Jensen and Petrongolo (2024)

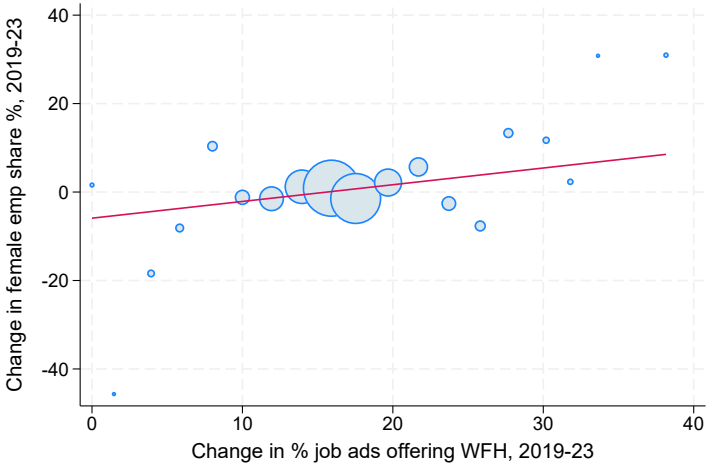
Anatomy of child penalties

- Biology?
  - Evidence from adoptive and same-sex couples (Kleven et al, 2021; Andresen and Nix, 2022) suggests biology largely irrelevant
- Productivity gaps (Gallen, 2023)
  - Average productivity gap of 8% between mothers and fathers
  - Part of the productivity gap driven by gradual reallocation of women into lower-TFP firms once they have children.
  - Uncompensated productivity premia for childless women, especially during prime child-bearing years $\rightarrow$ statistical discrimination channel

Anatomy of child penalties

- Labor supply adjustmnents
- New mothers take career breaks, work fewer hours, and slip down the occupational ladder
- Willingness to pay for family-friendly job amenities
  - Work flexibility (Mas and Pallais 2017; Goldin, 2014), WFH (Bloom et al 2022)
  - Shorter commutes (Le Barbanchon et al 2021)
  - Shorter workweeks (Wasserman 2023)

WFH opportunities and women's employment

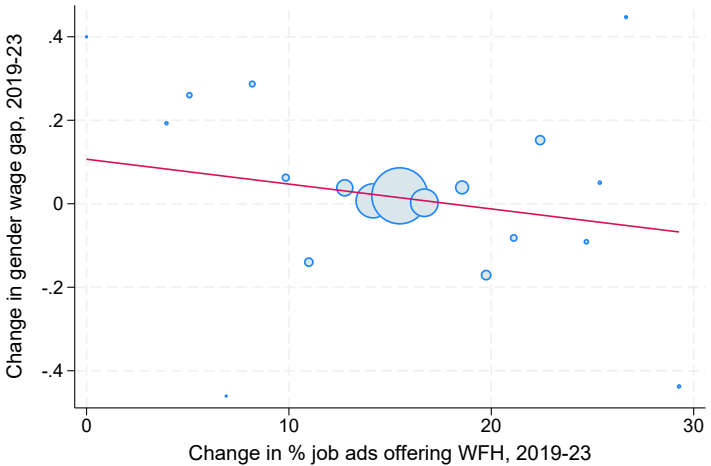


N = 2,168, Slope = 0.366* (0.173); Controls: occupation, industry and local area FE

Source: Hall, Lambert and Petrongolo (2024)

Jobs that saw a **10pp** rise in job adverts featuring WFH had an **increase** in the female emp share of **3.7pp**

WFH opportunities and gender gaps in wages



N = 652, Slope = -0.676 (0.578); Controls: occupation, industry and local area FE

Source: Hall, Lambert and Petrongolo (2024)

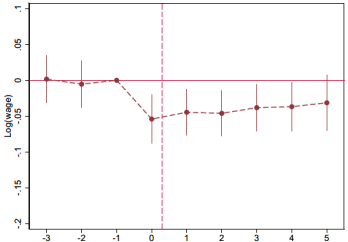
Jobs that saw an increase job adverts featuring WFH had **slower wage growth** for women than for men – but not statistically significant

Monopsonistic Labor Markets

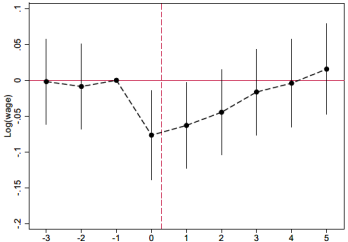
- Mechanisms exacerbated in non-competitive labor markets
  - Compensating differentials: labor supply infinitely elastic to utility differentials; wages compensate for non-wage amenities
  - Monopsony: labor supply imperfectly elastic to utility; persistent utility differentials across jobs
- Evidence of gender differences in job search
  - Narrower search, constraints on (dis)amenities, risk aversion (Cortes et al 2022) set limits to the effective size of female labor markets
- Narrower outside options reduce labor supply elasticity to the firm and provide employers with larger monopsony power on female employees, esp mothers.
  - E.g., Caldwell and Danieli (2022) find that differences in outside options explain 20% of the gender wage gap in Germany
- Evidence of differential mark-downs?

Differential responses to negative firm shock in Brazil

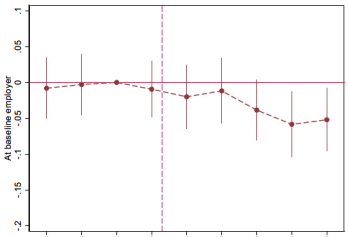
(a) Wages: women



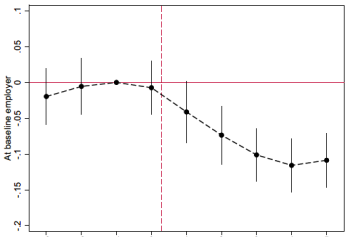
(b) Wages: men



(c) Stay at baseline employer: Women



(d) Stay at baseline employer: Men



Wage and quit responses following end of trade agreement
Sharma (2024)

The Role of Firms I

- Under frictional labor markets and/or heterogeneous preferences, firms have an incentive to provide non-wage amenities
  - Paid leave (Goldin et al, 2020); on-site childcare (Costas-Fernandez et al, 2023); WFH (Bloom et al, 2022)
- What's in it for employers?
  - Recruitment and retention of mothers (mostly high-wage and specialized)
  - Allocative consequences for employers, workers, and society

Overview

Gender norms

- Provide a natural explanation as to why work-family issues remain largely a "woman's problem" despite women's economic advancements
- Has attracted the most attention among the new classes of explanations highlighted by Bertrand (HLE, 2011)
- Akerlof and Kranton (2000) provide the theoretical foundation for much of the empirical work on this topic
  - Identity considerations directly enter an individual's utility function
  - Departure from prescribed behavior/norms generates disutility
- Growing literature has sought to provide direct tests of the relevance of the gender norms for women's relative outcomes

Evidence on the relevance of gender norms

- Career/marriage trade-offs
  - Identity prescription that "a man should earn more than his wife" affects marriage formation, wives' LFP and earnings, division of chores, and marital stability (Bertrand et al., 2015)
  - Job promotions for politicians increases likelihood of divorce for women relative to men in Sweden (Folke and Rickne, 2020)
  - Women avoid career-advancing actions due to perceived or actual trade-offs between marriage and career (Bursztyn et al, 2017)
- Willingness to pay for conformity
  - Response of spousal division of childcare to tax changes muted by gendered norms; couples willing to "leave money on the table" (Ichino et al., 2024)
- Comparative advantage cannot explain gender division of labor in household (Siminski and Yetsenga, 2022) or child penalty (Andresen and Nix, 2022)

Norms, preferences, and behavior

- Strong consensus on the relevance of norms for explaining gender gaps in the household and labor market
- Our understanding of what drives norms and its wider implications on preferences and skills remain lacking
- If norms are important, individual decisions operate under the constraints imposed by these norms $\rightarrow$ observed differences in skills, traits, and preferences are endogenous to prevailing stereotypes and norms (Bertrand, 2020; Lundberg, 2022)
- Open question: To what extent are gender differences along these dimensions intrinsic or socially conditioned?
- If discrimination arises due to prevailing stereotypes about gender-specific roles and attributes, are norms and discrimination two sides of the same coin?

Stereotypes and pre-market discrimination

- Adults shape gender-appropriate behavior in children, affecting their educational choices and preferences
  - E.g.: teacher biases (Carlana, 2019; Lavy and Sand, 2015) and prevailing gender attitudes (Nollenberger et al, 2016; Nosek et al, 2009) matter for maths performance
- Women's lower preferences for STEM careers/certain occupations could be socially constructed
  - Lack of counter-stereotypical role models (Carrell et al, 2010; Breda et al, 2023)
- Women/men bear penalties when deviate from commonly accepted behavior
  - "Headstrong" girls and "dependent" boys experience earnings penalties in adulthood (Kaestner and Malamud, 2021)
  - Fathers might face higher penalty for time-off than mothers due to violation of "ideal worker" norms (Weissharr, 2019)

What drives gender norms?

- Historical origins and persistence to present day
  - Traditional agricultural practices (Alesina et al 2013, Hansen et al 2015)
  - Uneven sex ratios due to convict resettlement in Australia (Grojean and Khattar 2019)
  - Cotton revolution and high-value work opportunities for women (Xue 2023)
  - Vertical cultural transmission sustains long-term persistence even as economic conditions change (Bisin and Verdier, 2001)

But also: Malleability of norms

- Gender norms has been shown to shift in response to
  - Tech and medical innovations (Goldin and Katz 2002, Greenwood et al 2005)
  - Political institutions, e.g. state socialism (Campa and Serafinelli 2019)
  - Public policies
    - EITC (Bastian 2020); paternity leave in Spain (Farre et al. 2023)
    - School-based interventions (Dhar et al. 2022)
- We know less about how widespread cultural change occurs
  - Models of information diffusion and learning (Fogli and Veldkamp 2011; Fernandez 2013)
  - Stability of social environment (Giuliano and Nunn, 2021)
  - Men's incentives to support women's rights depends on the return to education (Doepke and Tertilt 2009)

Open Questions

- How do gender norms evolve in the face of market forces that are making these norms increasingly costly?
- What are the types of gender norms that are likely to change or become relevant as the economic and social environment changes
- What does it take to precipitate and sustain widespread cultural change?

Information gaps

- Norms could remain sticky due to pluralistic ignorance
  - when most people personally reject a norm, but they incorrectly believe that most peers accept the norm, and end up following the norm for fear of social sanctions
- Evidence on misperceived social norms:
  - Female participation in Saudi Arabia (Bursztyn et al., 2019)
  - Maternal labor supply in the U.S. (Cortes et al., 2023)
  - Paternity leave take-up in Japan (Miyajima and Yamaguchi, 2017)
  - Basic rights of women to work outside the home and gender affirmative action around the world (Bursztyn et al., 2023)
- Effectiveness of information provision in shifting actual behavior?
  - Current information interventions too simplistic?
  - Norms exist within group processes; need for social proof and reality testing
    - Whose beliefs matter?
    - Peer effects paid in paternity leave-taking in Norway (Dahl et al., 2014)

Conclusions and research agendas

- Gender is now a mainstream topic in (labor) economics
- Much of the recent work on the remaining disparities centers around the **tension between work and family**, focusing on constraints imposed by **organization of work** and **societal norms**.
- Open question and avenues for research:
  - How do **firms** contribute to gender gaps in noncompetitive labor markets?
  - **Greater tension** between work and family?
    - "Future of work" does not seem to hold the solution
    - Rising parental time demands: childcare is "greedy" too?
  - How to **shift gender norms**? What policies/interventions are effective and why?